

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/003581

International filing date (day/month/year)
20.08.2004

Priority date (day/month/year)
21.08.2003

International Patent Classification (IPC) or both national classification and IPC
G06T1/00

Applicant
CANON EUROPA, NV

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/GB2004/003581

IAP20 Rec'd PCT/PTO 03 FEB 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/003581

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-14,16-42
	No: Claims	1,15
Inventive step (IS)	Yes: Claims	2-14,16-35,40-42
	No: Claims	36-39
Industrial applicability (IA)	Yes: Claims	1-42
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/003581

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

PCT/GB2004/003581

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

- D1:** Jones M. et al, Efficient representation of object shape for silhouette intersection, IEE Proceedings: Vision, Image and Signal Processing, Vol. 142, No. 6, pp 359-365, 1 December 1995
- D2:** US 2003/030636 (Olympus Optical) 13 February 2003 (2003-02-13)
- D3:** US 2003/066949 (Mueller et al) 10 April 2003 (2003-04-10)
- D4:** US 2002/159628 (Mitsubishi Electric) 31 October 2002 (2002-10-31)

2 Novelty, Article 33(2) PCT

The subject-matter of claims 1 and 15 does not meet the requirements of Article 33(2) PCT with respect to the disclosure of document **D1** (Fig. 17). In claim 1 it is stated that capturing unit and illumination unit are connectedly moveable relative to the object placing unit and the illumination unit is capable of providing illumination for silhouette images. However, because no further description of the illumination unit and relation of the illumination unit with capturing unit is given, Figure 17, where a camera flash is attached to the camera and is thus 'connectedly moveable relative to the object', discloses the features of claim 1 and consequently the features of claim 15.

3 Inventive step, Article 33(3) PCT

The subject-matter of claims 36 to 39 does not meet the requirements of Article 33(2) PCT with respect to the disclosure of document **D2** to **D4**: a photographic apparatus for generating a three dimensional model, comprising a placing unit (**D2**, Fig. 1B). Regarding a variable focal length feature - most of the photographic apparatuses have variable optical length nowadays and that feature doesn't represent anything of inventive importance. The same applies to the features of claims 37 to 39.

4 Technical Field: An image acquisition system for capturing a separate textural and silhouette images of an object to generate a 3D model.

- 5 **Closest Prior Art:** Document **D2** discloses several different image acquisition systems used to generate 3D models. Two different settings are possible. In the first setting the person is in the centre of an environment and observing a 360 degrees image. In the second setting the object is in the centre and is observed from all directions. For this second setting different image acquisition systems (with one or several cameras) are presented (see Figs. 7-10 and 18-20).
- 6 **Problem:** How to use one front illumination, one back illumination and one camera to obtain silhouette and texture images of an object from all directions, including top and bottom, without changing the position of the object with respect to the turntable.
- 7 **Solution:** Front and back illumination apparatus and camera are connected in a system where relative position of these elements is fixed. However, this system can be rotationally moved relatively to the object of interest, which is placed on a transparent turntable between the front and back illumination.
- 8 **Novelty:** The building blocks of the system (illumination unit, capturing unit, object placing unit) of claim 1 are well known in the art, however back illumination unit and capturing unit are normally independent (see document **D2** Fig.1B; document **D3**, Fig. 1; document **D4**, Fig. 4). The novel feature of claim 1 is that capturing unit and the front and especially back illumination unit are being connectedly moveable relative to the object.
- 9 **Inventive Step:**
- 9.1 The illumination/camera setup from documents **D2** is well known in the art, however there is no hint for the skilled person to connect the camera and the back illumination into a fixed device.
- 9.2 Also all other cited documents do not hint at fixing the relationship among illumination device and a camera and move this connected device relatively to the object.

Re Item VII

Certain defects in the international application

- 1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in document **D2** is not mentioned in the description, nor is this document identified therein.
- 2 Independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT. In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of claims are already known in combination from the document **D2** (see the PCT Guidelines, III-2.3a).
- 3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

Re Item VIII

Certain observations on the international application

- 1 Although claims 1, 27 and 36 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

The features of claims 27 to 33 could have been formulated as dependent on claim 1.